

## Correlations of Parameters Affecting EM Bias

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The fundamental measurement for this investigation is the repeat track sea surface **height (SSH)** difference (SSHD). The hypothesis is that when instrument and unrelated geophysical effects have been corrected the remaining SSHD is caused by a difference in EMB. With the fundamental assumption that **EMB** is proportional to **SWH**, our task is to find the best predictor of the proportionality. In addition to **only** being able to work with differences in quantities, **this work is made more difficult by** significant **real** correlations among several of the measurements. **In order to find the best overall** predictor of EMB, we have begun to explore these correlations. For **example**, work reported at several **TOPEX/POSEIDON** Science Team meetings has shown that **one gets an incorrect (wrong sign !)** EMB if one does **not** correct for the inverse barometer (**IB**) effect. Low barometric pressure is typically associated with **high** winds and waves. Therefore, **small** errors in **IB** will tend to distort **EMB** estimates. Therefore, our data fitting solves for adjustment of **IB**.

Many of the measured variables from the GDR, including the brightness temperatures from the TMR, and externally derived Sea Surface Temperature (SST) are used to search for correlations. The main search technique is multidimensional "histograms" to find the joint distribution of variables. **Simple** distributions will count the number of occurrences in the cell, **More** complex ones will keep the average value of key quantities, in particular SSHD, in cells. Distributions will be formed of both total quantities and repeat track differences. As an example, previous analyses (Callahan et al., 1994) have produced the joint distribution of wind speed and wave height. It had properties which appeared to make it **useful** for improving EMB fits, but initial attempts (unpublished) to use this information have yielded mixed results at best.

**In** addition to correlations, initial fitting of the data using simple **nonparametric** methods has been used to investigate the seasonal and geographical distribution of EMB variations.

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